SCHOTT

KL 1500 *compact*

Instructions for Use

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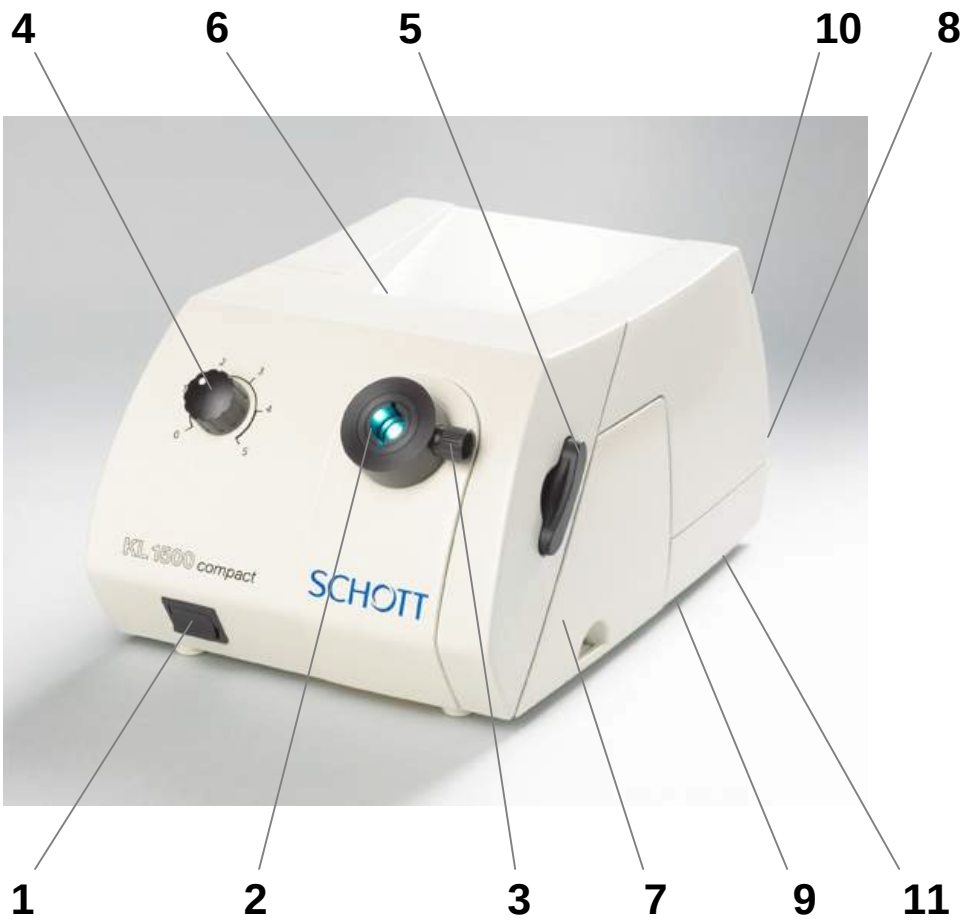
Instrument overview



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1. Important information

Symbols used:

Symbol	
	Warning of danger (caution, obey documentation)
	Warning of hot suface
¡	Off (stand-by condition, **not disconnected from mains!**)

Intend use:

The KL 1500 compact is intended for industrial and laboratory applications.

Cold light sources are used for the intensive illumination of all types of objects. The infrared components in the lamp radiation are filtered out. High intensity visible light is guided to the object through flexible or selfsupporting, moveable light guides.

The unit is tested and certificated to the applicable standards on electrical laboratory equipment (DIN EN 61010-1 and UL 61010A-1 as well as CAN/CSA-022.2 No. 1010-1).

Safety information:

Please read and obey these instructions carefully. The intrument's safety cannot be guaranteed if they are not obeyed.

Avoid looking directly into the open light guide connection or the light guide exit when the light source is switched on.

The KL 1500 compact emits high-intensity visible light. Because light-absorbing materials have the physical property of converting incident light into heat, damage can occur to heat-sensitive or flammable light-absorbing materials. To avoid such thermal damage and the potential danger of fire or burns, please obey the following instructions:

- Never cover up the open light guide connection or the light guide exit (danger of fire)!
- Never cover up the open light guide connection or the light guide exit with your hand or other part of the body (danger of burns)!
- When illuminating heat-sensitive or flammable light-absorbing objects (e.g. in microscopy), special care must be taken to ensure that a suitable light guide separation distance and lamp brightness are chosen so that no thermal damage occurs.

- When the light source is switched on, all light guide exits not being used in the working procedure must always be at a safe distance – at least 10 cm – from heat-sensitive or flammable light-absorbing materials (prevention of possible danger of fire). Therefore take care that each light guide exit is at the above safe distance from, for example, dark/coloured textiles and dark/coloured wood or plastics surfaces.
- To avoid unnecessary stressing of biological tissue by illumination with visible light, reduce the brightness and duration of illumination to the absolute minimum required level.

It is absolutely essential that you ensure that

- ð your KL 1500 compact light source is operated at the voltage stated on the model plate (11);
- ð all ventilation openings (9, 10) are kept free; in the event of insufficient cooling, a built-in thermostatic switch switches the instrument off temporarily (see point 5 “Trouble shooting”);
- ð the lamp has cooled down before it is changed; to remind you, a warning symbol is attached to the lamp compartment door:
  ⚠ (warning of hot surface);
- ð the filter slide and filter insert have cooled down before removing the filter insert; the slide carries the warning symbol ⚠ ;
- ð the filter slide is in one of the two end positions when the light source is being operated (see point 2.5 „Filter slide“)!

- ♦ The light source has been developed only for operation in dry rooms (see point 7 „Technical data“).
- ♦ This instrument is not suitable for operation in areas where there is an explosion hazard.
- ♦ Safe disconnection from the power supply takes place also by pulling out the mains plug.
- ♦ The instrument must not be opened or dismantled. Technical modifications to the instrument are forbidden. Repairs must be carried out only by the manufacturer or by its authorised customer service agencies.
- ♦ Please ensure that every user of the instrument has quick access to these intructions.
- ♦ The manufacturer is not liable for damage caused by failure to obey these instructions.

2. Operation

2.1 Light guide connection

First undo the fixing screw (3) of the light guide socket (2) by turning in an anti-clockwise direction. Push the light guide in as far as the stop and tighten the fixing screw by turning clockwise.

Caution: When inserting light guides with a location pin, care must be taken to ensure the pin fits into one of the two guide slots.

2.2 Start-up procedure

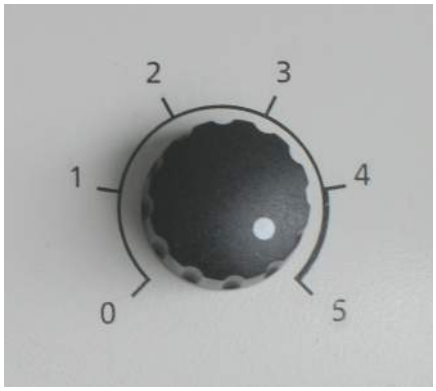
Switch on/off by operating the power switch (1) .

Position **O** visible: The instrument is switched off and in stand-by condition. For disconnection from the power supply, please pull out the mains plug!

To protect the halogen lamp the KL 1500 compact is fitted with a gentle start-up device that reduces the high switch-on current that would otherwise occur.

In addition, electronic stabilisation of the lamp voltage ensures stable light power regardless of fluctuations in the mains voltage.

2.3 Light intensity setting



The brightness can be adjusted steplessly by turning the light intensity setting knob (4).

The scaling is divided into 6 brightness levels, from 0 to 5.

The highest light intensity is achieved by turning fully to Position 5. The lamp lifetime is approx. 200 hours.

When the lamp is operated in Position 4 the lamp lifetime is about 1500 hours.

When set at Position 0 there is no more light intensity, i.e. the lamp is off.

Caution: Please note that when the instrument is set at 0 it is not switched off. The power switch (1) must be activated to switch off the KL 1500 compact (see point 2.2 “Operation”). For save disconnection from the power supply, please pull out the mains plug!

2.4 Filter slide

The KL 1500 compact has a filter slide (5) that can be fitted with a filter insert (available as an accessory).

The warning symbol ⚠ on the filter slide reminds you that it is essential that the slide is in one of the two positions or the latched position when the light source is being operated. This is the only way to ensure optimum air cooling of the light source.

Operating the light source with the filter slide in an intermediate position can cause damage to the latter.

Inserting filters into the filter slide

Please take care to ensure that the filter slide has colled down before fitting the filter insert into it. It carries the warning symbol ⚠ to remind you.

Pull out the filter slide (5) as far as the 2nd latched position and insert the required filter. The light source is fully operational in this position.

When the filter slide is pushed in up to the end stop, the filter is located in the optical beam path.

If you want to operate the light source without a filter for a short time, pull out the slide only up to the first latched position. In this position the filter is still in the light source but no longer in the path of the beam.

3. Replacing the lamp

Please ensure that the lamp and lampholder have cooled down before replacement. The corresponding warning symbol ⚠ is attached to remind you.

First of all switch off the light source and pull out the mains plug.

Open the lamp compartment (7) by pulling out the indentation provided as far as the stop. Take out the lamp, including the socket, upwards out of the holder. Carefully remove the faulty lamp from the socket and insert a new lamp (use light bulb specified in part list). Then press the lamp downwards into the holder as far as the stop.

Push the lamp compartment in until it latches (audible locking sound).

Put in the mains plug and switch the light source on.

Replacement of the lamp socket:

This high-quality lamp socket has a guarateed service life of 20,000 operating hours or, alternatively, 20 lamp changes.

To replace the lamp socket, first carefully remove the lamp, as described above. With the aid of a screwdriver loosen both upper fixing screws on the clip and remove the complete component. Insert both cable ends of the new socket (for replacement part number see Point 4.6) into the corresponding openings on the clip and tighten the screws again (make sure the attachment is secure). Reinsert the lamp and press into the mounting, as described above.

4. Maintenance

Your KL 1500 compact is maintenance-free.

There is no provision necessary for disinfecting the light source when using it in a medical field.

To clean the outside of the instrument, use a soft dry cloth or commercially available plastic cleaning cloths.

5. Troubleshooting

If you are unable to rectify the fault by the actions mentioned as follows, please contact your specialist dealer or the nearest SCHOTT agency. More extensive repairs must be carried out by the authorised customer service depot.

Fault	Possible causes	Remedial action
Lamp out, fan not running	Instrument not switched on	Switch instrument on
	Plug not in socket	Plug the plug in
	No mains electricity voltage	Check mains voltage
	Lamp compartment not closed	Close lamp compartment
Lampe off, fan running	Lamp defective	Replace lamp (see point 3 of these instructions)
	No lamp	With light source switched off, install lamp
	Lamp no contact	Push lamp into socket
	Electronic overheated	Ensure adequate cooling, check that lamp type is correct, re-start instrument after cooling down for a prolonged time

6. Accessories

A wide range of accessories is available for your KL 1500 compact. A separate brochure gives you comprehensive information (see page 12 for address information).

Only SCHOTT light guides and accessories guarantee perfect operation, safety and optimum light yield.

6.1 Light guides

Self-supporting and flexible light guides in various lengths and diameters are available, as well as point and slit illuminators.

6.2 Halogen lamps

When ordering halogen lamps as spare parts (see point 6.4 of this instruction), the lamp type that enables optimum light yield and illumination will be supplied.

6.3 Filters

Optical filters can either be inserted into the filter slide (5) or placed in front of the light guide exit as a screw-in or push-on filter in conjuction with an auxiliary focussing device (accessory).

Details of the auxiliary focussing device and the filter types available as standard can be found in the accessories catalogue.

6.4 Spare parts

Halogen lamp 15 V / 150 W Philips, type 6423 Philips, type 6423 XHP Osram, type HLX 64634	(Catalogue No. 153000)
Lamp socket	(Catalogue No. 974.12-011)

To ensure maximum performance, light yield and safety you must only use the spare parts stated above.

7. Technical Data KL 1500 compact

Properties		Values
General information		
Type description	-	KL 1500 compact
Dimensions (W x D x H)	mm	approx. 185 x 260 x 135
Weight	kg	approx. 3
Cooling	-	Axial (fan cooled)
Ambient temperature*	°C	+ 5 ... + 40
Relative air humidity*	%	Up to 31°C ambient temperature: 85% From 31°C to 40°C ambient temperature: decreasing linearly to 75%
Air pressure*	hPa	700 ... 1060
Transport and storage Temperature Rel. Air humidity Air pressure	 °C % hPa	 -20 ... +70 10 ... 95 (non-condensing) 500 ... 1200
Contamination level	-	2
Electrical information		
Operating voltage, frequency		90 - 264 V ~ 50 - 60 Hz
Power consumption, max.	VA	max. 180
Protection class	-	I
Overvoltage category		II
Lamp type	-	Halogen reflector lamp Philips, type 6423 Philips, type 6423 XHP Osram, type HLX 64634
Lamp rated voltage	V	15
Lamp rated power	W	150
Average lamp lifetime Level 4 Level 5	 h h	 1500 200

* Test conditions of Standards DIN EN 61010-1 and UL61010-1

Lighting information		
Maximum effective light guide bundle diameter	mm	9
Total light flux at light guide exit (SCHOTT light guide, Ø 9 mm, typical values)		
Level 4	lm	250
Level 5	lm	450
Light entry angle ($2\alpha_{eff}$)		approx. 53°
Heat protection filter	-	SCHOTT KG 2, 45 x 45 thickness = 2,0 mm, toughened
Approvals	-	CE, CSA
EMV-class	-	A

The right is reserved to make changes in the design and supplied items within the scope of on-going technical development.

Warning! This is a EMV class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures. In this case, please contact the cusomer service.

SCHOTT AG

Business Unit Fiber Optics

Otto-Schott-Straße 2

55127 Mainz

Tel. 0049 / (0)6131 / 66 - 0